



by Bob Jewett

Close Calls

Let the roll of the balls settle disputes.

THE SCENE: YOU'RE playing well, the table is cooperating by not surprising you, your shots are scoring dead center, and your position play is pinpoint accurate. Nothing stands between you and certain victory.

Nothing, that is, except, "Foul!"

You look up at your opponent in disbelief. The shot he's complaining about was a little tricky, and you thought for a moment about having someone watch the hit, but you were in rhythm, and shot without breaking stride. There's really no question in your mind that the shot was good. Anyway, you were in a much better position to see the shot than your opponent, weren't you?

"You hit the wrong ball first," he continues, with a case-closed-get-off-the-table attitude.

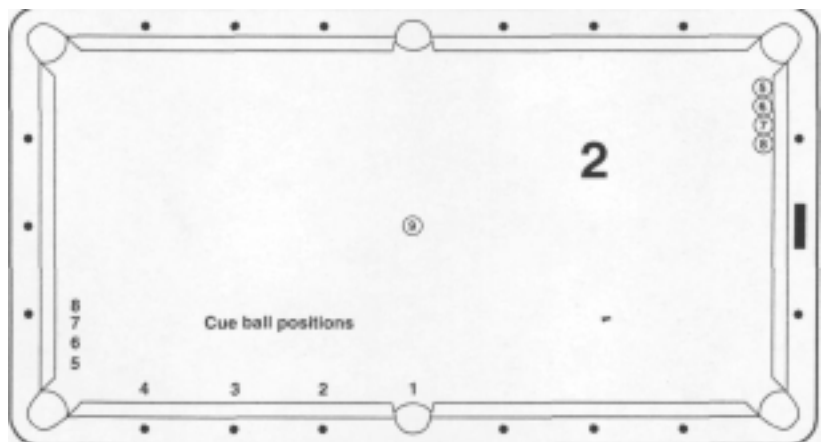
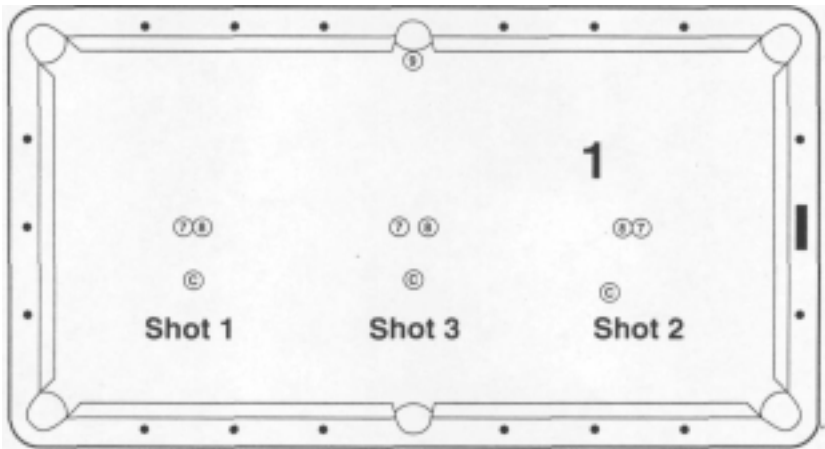
You wish the match had a referee. You wish you had stopped to have someone watch the hit. You wish one of the spectators would speak up, but they have all suddenly turned their attention to neighboring tables, leaving you alone with your adversary.

How could you have avoided this situation? The usual way is to call over a third party to watch the hit. With luck, he will be both competent and unbiased. Two other ways out are to play a safety or shoot some other shot.

Let's look at how the balls can be your impartial witness in one of the most common "close call" situations in pool: Two object balls are close and you must hit a particular one first. In Diagram 1's Shot 1, the 7 and 8 are on the line (foot string) with the 8 a ball width or two below the spot. The rules say to hit the 7 first and you plan to pocket it in the corner.

This case is pretty simple to judge. If the cue ball hits the 7 first, it goes to the right after the shot, while it goes to the left if the 8 is struck first. Also notice that the first ball struck moves faster than the second ball.

There is a third possibility: hitting the 7 and 8 simultaneously. In this case, the cue ball will come straight back at you. This is rare; you might see a simultaneous hit once in twenty shots if you try it from a fixed position with



small corrections each time. (Hint: If the cue ball always exits to the right, even if it looks like you are exactly splitting the balls, aim a little more to the right.) Whether a simultaneous hit is good or bad depends on the particular rules of the game and sometimes on the referee.

A more complex situation is in Shot 2, where the cue ball has been moved to make the shot nearly straight. In this case, the cue ball will stop almost dead with a good hit on the 7 first, but will scoot to the right after hitting the 8 first. The 7 can be pocketed either way, since hitting the 8 first changes the contact point on the 7 very little. If this shot came up in a game of straight pool or one-pocket, you might even try to hit the 8 first, perhaps to break up a

cluster close on the right, or to get away from the 8 for position. (If you find it impossible to pocket the 7, move the balls farther from the spot, or use left English.)

Finally, Shot 3 shows a position where it's impossible to tell from the action of the cue ball which object ball was struck first. The 7 and 8 are precisely 0.932 inches apart. If calipers aren't handy, use a quarter; it's just the right diameter. The cue ball will stop dead no matter which ball you hit slightly first. This can be worked into a trick shot, using follow to make the 9. If the balls are the wrong distance apart, either more or less, it's very difficult to pocket the 9.

Now that you are armed with some knowledge about judging this kind of

shot, how can it keep you from becoming the victim in the scenario above? A fourth way to deal with controversial shots is to discuss with your opponent whether it can be decided by the action of the balls before you attempt the shot.

There will always be border-line calls that rely on the judgment of the observer, but often the balls speak for themselves. Make sure they're heard.

Side Pocket Practice

Diagram 2 shows a "progressive practice" drill that should really sharpen up your open-table side-pocket shots. For a general discussion of the "progressive practice" method, see the December issue.

The 9 ball always is placed on the center spot for this drill. Starting with the cue ball in position 1, pocket the 9 ball in the side pocket. Each time you make the shot, move up one position for your next. If you miss, move the cue ball one position down. For positions 5 through 8, place the cue ball so the corresponding object ball on the opposite end rail is exactly in line with the cue ball and the 9 ball.

Shoot 10 to 15 shots in each set. For the first set, place the cue ball far enough off the rail to make a comfortable bridge on the bed of the table. Then try the cue ball a few inches from the rail, and finally try the shot with the cue ball frozen to the rail.

After doing that, practice cutting the ball to the right by shooting the mirror image of the drill, moving the cue ball to the right after each successful shot, left after each miss.

Like other progressive drills, the cue ball position where you spend most of your time shooting from is indicative of where your pocketing average is 50 percent. To further fine tune your play try the drill again, but move the cue ball only a fraction of a step after each shot. The less distance you move between shots, the more accurate your x estimated 50-50 point will be.

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Close Quarters

NEARLY EVERYBODY HAS a problem when the cue ball stops too close to the next object ball. Beginners, old hands and tournament directors all hate it when something like Shot 1 in Figure 1 comes up, with the cue ball only a ball from an object ball. Aim, stroke, and rules are all potential pitfalls.

The main problems with aiming the shot are that you have little practice at it and the amount of cut required changes very quickly with how close the two balls are. It's hard to get a good feel for the shot. Fortunately, there is a system that gets you close to the right angle.

First, consider the expanded shot in Figure 2. The two balls are exactly a ball apart, along the line AB. If the cue is shot along line AC, it will have the position of the dotted ball when it hits the object ball, its center will be at D, and it will drive the object ball towards E. Geometry tells us that the angle B-A-C is almost the same as angle B-F-E. Angle B-A-C may look larger than B-F-E, but that is an illusion caused by line AC starting farther back.

Going back to Shot 1, the cue-1 line is directly towards the 2 ball and we want the 1 ball to go in the pocket a diamond to the left of the line of centers. The system tells us to shoot the cue ball a diamond to the right, or straight at the 3 ball. Let's refer to this as a cue ball angle of one diamond.

If there were no throw in the shot, this would work; but there is enough throw that the shot will miss badly. On my table, it banks back to pocket P. Try it yourself.

There are two practical ways to compensate for the throw. First, try a little outside English, in this case right English. With my tip and cue, half a tip of English for each diamond of cue ball angle on this length shot is about right. Judgment is required, since several factors change the effectiveness of the English.

Alternatively, you can compensate by aiming for a thinner hit. This method is less sensitive to the effects of the tip and cue. I find that for each diamond of cue ball angle, two extra balls of cut are needed. In shot 1, that means my cue stick is aimed through

the center of the cue ball directly at the 3 ball. If the diamonds aren't conveniently placed for a particular shot, add one-third more cut than for the "simple" system, since there are about six balls per diamond.

You're all set if the cue ball stops exactly $2\frac{1}{8}$ inches from the object ball, but suppose it stops two balls away. Some more simple geometry says to use only half as much cue ball angle for a given object ball cut. This is shown in Shot 2, where the cue, 5 and 6 balls are in a line. The simple system for a two ball separation would have us aim towards the 7 ball; but with the correction for throw, the correct aiming spot is the 4 ball. Note that for half a diamond of cue ball angle, only one ball of compensation is needed, which is the same one-to-three ratio used in Shot 1.

As with any system, you'll need to practice this one if you hope to use it successfully. The balls usually won't oblige you by lining up parallel to a rail and pointing at a diamond, so try some more random configurations

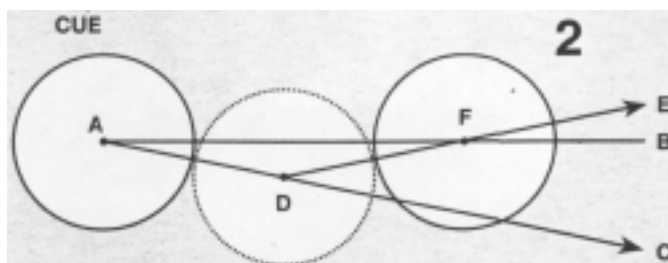
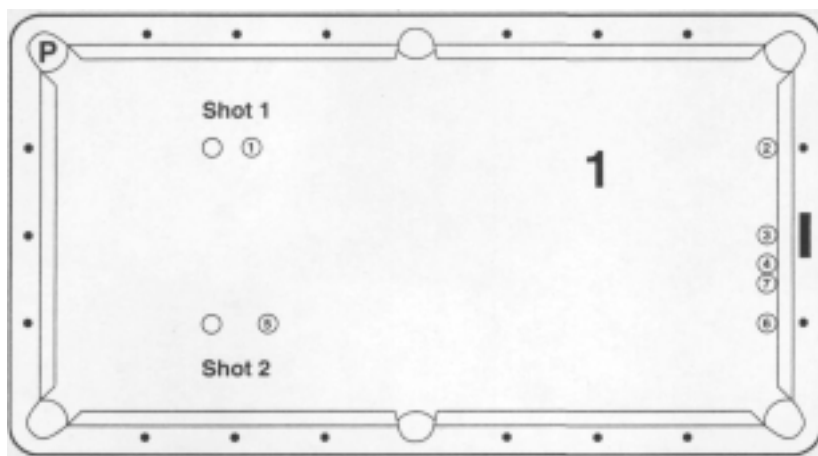
once you've mastered Shots 1 and 2. An amazing result is that as long as the cue and 1 ball are lined up towards the 2 ball, and one ball apart, the correct aiming spot remains close to the 4 ball.

Check that for your equipment the same one-to-three compensation is needed. Try the outside English compensation method to see how it works for you, since sometimes you'll need to use outside for position. Also check out what happens to the needed compensation if you use inside English (left English in Shot 1).

For any other cue-to-object ball distance, remember the ratio of object ball angle to cue ball angle is equal to the separation distance when measured in ball diameters. Try to find positions where the system breaks down, so you'll know when to apply it.

There are still a few people who think a cut shot without English has no throw. Give them a brief geometry lesson, then show them this system, and see if they change their minds.

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Close Quarters II

IN THE LAST issue, I described a system for aiming when the cue ball is close to the object ball. This time, I want to suggest some stroke techniques that will help you avoid hitting the cue ball a second time when the object ball is near. These techniques will be especially valuable in pool's finesse games, 14.1 and one-pocket.

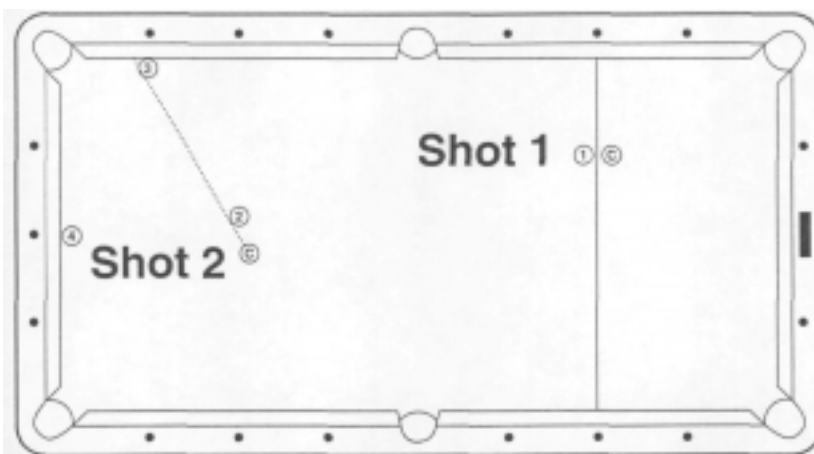
In Shot 1 is a proposition bet which I've heard was a favorite of Luther Lassiter. The cue ball and the 1 ball are on opposite sides of the line and a quarter-inch apart. The goal is to make the 1 ball hit the end rail without the cue going over the line. You must use a level stroke.

First, see how short a stroke you can develop. Start with the cue ball four inches back — hitting the end rail should be easy, and if you use draw, the cue ball should come back without any forward motion after contacting the one. Move the cue ball gradually closer to the 1 ball. I find that by the time they are half an inch apart, my arm hurts from the unaccustomed effort of suddenly stopping the cue stick. Try this drill on a table now.

At this point your arm should be sore, you have developed a special stroke for very close shots, you've grown to hate the sound and feel of a double hit, and you're ready to bet that the shot's impossible when the balls are only a quarter-inch apart.

Now for the trick.

Place the balls for Shot 1, make a firm closed bridge with a little draw, and with the tip about half an inch from the cue ball. Let the back end of the cue stick rest on the rail. Without moving the stick, slide your grip hand up until your knuckle is pressed against the outside edge of the rail, and take a very firm grip on the cue. Take a short back swing, keeping the stick rubbing on the rail. Your hand will hit the rail and stop the cue stick quickly enough to avoid a double hit. You may need to adjust the tip-to-ball starting distance depending on the springiness of your knuckles and how hard you're willing to hit the table. Old-fashioned square rails give a better stop than modern rails that slope away from the cushion.



The bad news: this shot is not generally useful, unless the cue ball is the right distance from the rail. The good news: there is another technique that can be used in many close situations. For Shot 1, you can make the 1 ball hit the far rail twice and still not drive the cue ball over the line.

I first saw the technique when Rene Vingerhoedt, the great Belgian billiard fancy shot artist, gave an exhibition in the room where I was just beginning to learn the game. He first shot standard artistic billiard shots. He then announced that he was going to change to his masse cue for the second half of the show, but first he would shoot the "Spanish Dance." He placed the balls just like Shot 1, and took a tremendous stroke, smashing the cue ball into the red ball. The red took off at a million miles an hour, but the cue ball just sat where it started and spun. And wobbled — that was the "dance" part. Vingerhoedt got out his case, took his cue apart, and screwed his masse cue together. The cue ball was still dancing.

How did he do that? With a technique that is well known in Europe but still a mystery to most players in the United States. It's called a whipping stroke. It's rather difficult, so let's start with something simpler that gives some feeling for the shot without having to master the strange whipping motion.

In Shot 2, the idea is to find how close the cue ball can be to the object

ball on a half-ball cut and still avoid a double hit. The 2 ball is placed so it would be touching a ball on the spot, and the three and four are placed on the diamonds. The 3 ball is there simply to help you place the cue ball on the proper line. Aim through the center of the cue ball at the edge of the 2 ball and slightly into the edge of the 3. Neglecting throw, the 2 ball will be driven straight across the table and the cue ball, if cued on the equator, will hit the 4 ball.

Practice this shot with a normal follow through, moving the cue ball closer and closer to the 2 ball until a double hit occurs and the cue ball hits the end rail on the far (high) side of the 4 ball.

Next try the same progression using extreme-right English on the cue ball. You'll probably find that the cue ball can start much closer to the object ball because it starts moving to the left just after collision, which makes room for the stick to pass. If you use draw with the English, you should be able to land the cue ball on the near (low) side of the four. If the draw takes quickly enough, this technique could be used for the proposition in Shot 1.

Finally, try the shot with outside or left English. This will result in a double hit even when the balls are an inch or more apart because the cue ball will be moving into the path of the stick after the collision with the 2 ball.

Try the same setup for a fuller shot on the 2 ball, and you should get simi-

TECH TALK

lar results; right English will help you avoid the foul.

The whipping stroke uses a similar idea, but it is mostly the stick that's moved to avoid the second hit. Instead of using a straight follow-through, the cue is swerved to the outside of the shot during the final stroke.

In Shot 1, set up for a lot of right English with the cue stick aimed toward the 4 ball. On the back swing, swerve the butt away from you (if you're right-handed) and on the forward stroke swerve back, so that at the end of the shot, the cue stick is pointed towards the 3 ball. While swerving the cue, keep your bridge stationary.

This outside-in motion is difficult to master, since it goes against the standard ideal straight follow-through. It's not easy to have the tip come back to just the right place on the cue ball after having been pulled clear to the other side of the cue ball. And adding object-ball accuracy to this forceful shot will be even tougher.

Once you've got the timing down, you'll be able to shoot straight towards the 1 ball in Shot 1, leaving the cue ball spinning in place. With a little draw besides the English, you can bring the cue ball straight back to the end rail. Best of all, you'll have the stroke technique to avoid all forms of double-hits.

There's one more facet to this shot — whip without English. The purpose of swerving the cue stick is to get it away from where the cue ball is going to stop. Swerve down is nearly as good as swerve to the side. Aim straight at the 1 ball, starting near the center. On the final stroke, raise the butt of the cue so the tip dips down to the cloth after hitting the cue ball with draw. The needed stroke is very short, as in the first drill, since the cue ball will be drawing back soon after the hit and you need to give it room.

Don't be discouraged if you can't get the action right away. It took me 25 years to get a reasonable understanding and feel for the shot after I first saw it in 1966. If you can find an instructor who knows this shot, take a lesson.

Bob Jewett is a researcher for Hewlett Packard and a former ACU-I billiard champ.



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Close Quarters III

THIS IS THE third and last article on special problems to avoid, and techniques to use, when the cue ball is close to the object ball.

The first part presented an aiming system that's useful when the cue ball is about half a ball to two balls from the object ball. The second part covered stroke techniques that can prevent double hits. I discovered another technique recently that will let you execute Shot 1 of last issue's column without the rail-banging: Move your grip hand up the cue so your forearm is nearly horizontal when you hit the cue ball. Unless you drop your elbow badly, your stroke will barely penetrate the cue ball. This will avoid the soreness you may have developed by trying to cut a normal stroke short.

Now we're going to look at the most difficult aspect of "close quarters" shots: the rules. There are lots of rules, all different, and they've changed in the past six months. Here are some of the rules I've seen in rule books or tournaments, that now seem obsolete:

1. Any single stroke is fair, regardless of how many times the stick hits the cue ball. If you ever play by this rule, develop a foot-long follow through, and you'll be set.
2. Same as Rule 1, but the cue ball must start within a chalk cube of the object ball.
3. The referee can call a double-hit foul only if he can actually see the stick hit the ball a second time. Try this one yourself with a friend

as the referee. Use the stroke developed for Rule 1.

4. If the cue ball is still on the tip when it hits the object ball, the shot is fair. Do you know exactly how long or far the cue ball stays on the tip? Neither does any referee, so this rule is almost impossible to apply. The answer is roughly one hundredth of an inch to half an inch, depending on tip firmness and the shot's speed and acceleration.

Now for the current rules. The Professional Billiard Tour Association has just published its own rule book, and double hits are discussed on pages 53, 84 and 90. On page 54, in the General Rules section, the book says it's OK to hit the cue ball twice (or continuously, maybe) as long as you elevate the cue and use draw. Rather, that's how I interpret it, since the wording isn't clear. If I'm right, this isn't much different from Rule 1 above, except why the requirement for elevation? And how much?

Further along, in the sections on straight pool and one-pocket, we see the rule, "If at any time during the game the cue ball is hit twice during one shot, it is a foul." This would seem to take precedence over the General Rule, but only for 14.1 and one-pocket.

The Billiard Congress of America rule book also has some changes for 1993. Check out pages i, 41, 45, 98, 108, 114 and 115. An addition on page 41 states: "2.20 Judging Double Hits.

When (the cue ball and object ball are close), the following guidance may apply: if the cue ball follows through the object ball more than 1/2 ball, it is a foul." If you did your homework last time, you know that there will always be a gray area between obviously clean and clearly dirty shots. This instruction at least gives referees something definite to measure against.

The main BCA rule is on page 45. Unfortunately, the wording is again unclear, but it seems that it is a foul if the tip is still on the cue ball when the latter hits the object ball or if the tip hits the cue ball a second time.

It is especially difficult to apply this last rule when the cue ball is only a hair's breadth from the object ball. There is a special rule on page 98 that applies to snooker: "...where the cue ball and an object ball are almost touching, it shall be deemed a legal shot if the cue hits the finest possible edge of the object ball."

The rule is a little clearer for billiards (page 115), even if they've changed terminology: "A push shot is one in which the cue tip remains in contact with the cue ball after the cue ball strikes an object ball, or when cue tip contacts the cue ball after cue ball strikes the object ball."

By now you're wondering what rule to use. As with all rules, that's between you and your opponent in a private match or for the tournament director to specify. My own preference is for a combination of the billiard rule with the snooker "finest edge" rule.



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Test Time

THE BCA HAS begun an instructor certification program, which trains, tests and certifies pool instructors. The written tests, which are now being compiled, have sections on teaching, rules, equipment, etc. Having raised my hand at the right (or wrong) time, I'm doing the compiling, and I'm asking for your help.

Do you think you know enough about pool to teach it? Would you like to test yourself against the other readers? Try the questions below. Since there is no one to administer the test to you, consider it a take-home; you're allowed to use any reference available. You may find the 1993 *BCA Rule Book* helpful.

Write out the answers to any ten of the questions below and send them in. The three best sets of answers will receive a year's subscription to this magazine. Since the questions vary greatly in difficulty, you get more credit if you pick tougher questions.

You can get extra credit by sending in three new questions you feel should be on the test, but please include answers. One last rule: the judge's decisions are final and I'm the judge. Good luck, and keep your eyes on your own paper.

1. When a shot is played with side spin, several important effects are noticeable and may cause the shot to fail if not included in the planning for the shot. Name three of those effects, describe them, and describe how you demonstrate them to students.
2. What are the important factors in cue selection?
3. What are the basic goals of the stance (foot, arm, hand, and body position)?
4. What are some specific parts of a good stance that achieve those goals?
5. What is the "dominant eye" and how can you test for it?
6. What are some symptoms of incorrect eye alignment?
7. What conditions are necessary for the cue ball to stop dead at the instant it hits an object ball?
8. What additional condition is necessary for a stop shot (for the cue ball to remain in position after the instant of impact)?
9. Give three common things that

cause the cue ball not to stop dead on a stop shot.

10. Describe the "ghost" or "phantom" ball aiming system.
11. What other systems give equivalent aiming lines?
12. For roughly what length of shot is the simple phantom ball system too inaccurate on a half-ball cut shot?
13. What is required to get a lot of draw on the cue ball?
14. What is recommended but not actually required for lots of draw?
15. Describe some situations in which side spin is required to make a shot (not counting position requirements).
16. In damp conditions or on dirty cloth, draw dissipates rapidly. Why?
17. Describe aiming a half-ball shot. Neglecting throw, what is the cut angle for a half-ball shot?
18. Describe the simple "mirror system" for shooting bank shots, and at least three methods of lining shots up for that system.
19. Give three situations in which the simple mirror system is not accurate enough to aim bank shots.
20. How large is a pool ball?
21. With what tolerance?
22. Approximately what fraction of pool balls are not within tolerance?
23. How large is the playing surface on 4' x 8' and 4 1/2' x 9' tables, and how is it measured?
24. What is the required thickness of slate?
25. What are the allowed weight and dimensions of a cue stick?
26. What is the grace period before a match is forfeited for lateness?
27. What should a referee do prior to a match?
28. Is a "split hit," that appears to have been simultaneous contact on both a legal and an illegal object ball, a foul?
29. At 9-ball, a player is stroking, about to shoot, the 4 ball. A spectator shouts out, "Shoot the 3!" What should the referee do?
30. Is a miscue a foul?
31. At 9-ball, when does an object ball spot?
32. At 9-ball, a player plays the 1-7 combination, pockets the 7, but the 1 ball goes off the table. What happens?
33. A player "pushes out" with the side of his stick, and is warned not to

do so. Is there any penalty, and does it change for a second offense?

34. When calling a shot at 8-ball, what must be specified besides the ball and the pocket?
35. On an open break, how many balls must be driven to the rail if no ball is pocketed?
36. What is the penalty at 8-ball for failure to make an open break?
37. What is the penalty at 9-ball?
38. With ball in hand after a scratch on the break, what are the restrictions on cue ball placement at 9-ball?
39. At 8-ball?
40. Give four examples of how a player can foul during the other player's inning.
41. At 14.1, a player fails three times in a row to drive two balls to the rail on the opening break shot. What is the score after those three strokes?
42. What happens if a player unscrews his jointed cue stick?
43. While playing a bank shot, the player places the chalk where he wants to hit on the rail, then shoots. Is that a foul?
44. Describe a push shot.
45. What is the specific criterion used to judge double hits, when the cue starts very close to the object ball?
46. If a ball stops at the brink of a pocket, how long is it given to drop before it is considered not to have been pocketed?
47. May either player inspect the rack prior to the break?
48. If the cue ball is frozen to the object ball, what sort of stroke is permitted towards that ball?
49. At 8-ball, what happens if the 8 is pocketed on the break?
50. What happens in 9-ball if the 9 goes on the break?
51. At 8-ball, a player calls safe and then pockets an easy, obvious shot. What happens?
52. What happens at 9-ball for the same situation?
53. At 9-ball, the player pockets the 9, and cue ball is rolling slowly up the table towards the middle of the end rail. The player picks the cue ball up while it is barely moving and places it for the next break. Has he fouled?

Bob Jewett is a former ACU-I pool champion and a researcher at Hewlett-Packard.